



# CERTIFICATE OF ANALYSIS

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**Date:** May 26, 2005

**ALS File No.** V7902

**Report On:** 40692 Water Analysis

**Report To:** Gartner Lee Ltd.  
2251 2nd Ave  
Whitehorse, YT  
Y1A 5W1

**Attention:** Mr. Martin Guilbeault

**Received:** May 9, 2005

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**ALS ENVIRONMENTAL**

per:

Brent C. Mack, B.Sc. - Client Services Coordinator  
Natasha Markovic-Mirovic, B.Sc. - Project Chemist

File No. V7902

**REMARKS**



Please note that the detection limits for certain Anions and Metals have been increased for some of the samples reported in the following data tables due to sample matrix interferences.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	S1A	S2A	S2B	S3	S1B
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	11:50	14:00	14:30	14:30	12:20
ALS ID	1	2	3	4	5

**Physical Tests**

Hardness	CaCO3	4440	3760	1880	4700	447
pH		6.90	6.98	6.37	6.72	7.22

**Dissolved Anions**

Alkalinity-Total		CaCO3	205	213	55.0	173	25.7
Bromide	Br		-	-	-	-	-
Sulphate	SO4		4550	1860	1760	4610	403

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Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	S1A	S2A	S2B	S3	S1B
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	11:50	14:00	14:30	14:30	12:20
ALS ID	1	2	3	4	5

**Dissolved Metals**

Aluminum	D-Al	<0.50	<0.50	<0.10	<0.50	<0.050
Antimony	D-Sb	<0.025	<0.025	<0.0050	<0.025	<0.0025
Arsenic	D-As	<0.050	<0.050	<0.010	<0.050	<0.0050
Barium	D-Ba	<0.040	<0.040	<0.040	<0.040	<0.040
Beryllium	D-Be	<0.010	<0.010	<0.010	<0.010	<0.010
Boron	D-B	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	D-Cd	0.0111	0.0149	0.00079	<0.0025	<0.0025
Calcium	D-Ca	609	502	501	589	123
Chromium	D-Cr	<0.025	<0.025	<0.0050	<0.025	<0.0025
Cobalt	D-Co	<0.025	<0.025	0.0053	0.040	<0.0025
Copper	D-Cu	<0.050	<0.050	<0.010	<0.050	<0.0050
Iron	D-Fe	<0.060	1.16	99.0	5.59	0.093
Lead	D-Pb	<0.050	<0.050	<0.010	<0.050	<0.0050
Lithium	D-Li	0.13	0.12	<0.10	0.14	<0.10
Magnesium	D-Mg	710	609	152	784	33.8
Manganese	D-Mn	45.2	50.8	11.6	72.5	0.035
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.050	<0.050	<0.010	<0.050	<0.0050
Nickel	D-Ni	1.17	1.17	0.073	1.05	<0.025
Selenium	D-Se	<0.050	<0.050	<0.010	<0.050	<0.0050
Silver	D-Ag	<0.0025	<0.0025	<0.00050	<0.0025	<0.00025
Sodium	D-Na	39.8	30.5	13.9	26.2	25.1
Thallium	D-Tl	<0.010	<0.010	<0.0020	<0.010	<0.0010
Titanium	D-Ti	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	D-U	<0.010	<0.010	<0.0020	<0.010	<0.0010
Vanadium	D-V	0.067	<0.060	0.079	0.106	<0.060
Zinc	D-Zn	113	127	8.65	158	0.067

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID		SRK04-04-04	SRK04-04-03A	SRK04-04-03AR	SRK04-04-03B	P96-7
Sample Date		05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time		10:45	10:48	10:48	11:00	
ALS ID		6	7	8	9	10

**Physical Tests**

Hardness	CaCO3	3810	3970	3940	3890	1740
pH		5.23	5.87	5.95	3.72	7.81

**Dissolved Anions**

Alkalinity-Total		CaCO3	63.6	91.0	96.7	61.7	258
Bromide	Br		-	-	-	-	-
Sulphate	SO4		7080	5480	5410	16700	1500

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	SRK04-04-04	SRK04-04-03A	SRK04-04-03AR	SRK04-04-03B	P96-7
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	10:45	10:48	10:48	11:00	
ALS ID	6	7	8	9	10

**Dissolved Metals**

Aluminum	D-Al	1.4	<1.0	0.50	4.3	<0.050
Antimony	D-Sb	<0.050	<0.050	<0.025	<0.050	<0.0025
Arsenic	D-As	<0.10	<0.10	<0.050	<0.10	<0.0050
Barium	D-Ba	<0.040	<0.040	<0.040	<0.40	<0.040
Beryllium	D-Be	<0.010	<0.010	<0.010	<0.10	<0.010
Boron	D-B	<0.20	<0.20	<0.20	<2.0	<0.20
Cadmium	D-Cd	0.0151	0.0066	0.0072	<0.0050	<0.00025
Calcium	D-Ca	457	454	448	459	494
Chromium	D-Cr	<0.050	<0.050	<0.025	<0.050	<0.0025
Cobalt	D-Co	0.500	0.349	0.337	0.225	<0.0025
Copper	D-Cu	<0.10	<0.10	<0.050	<0.10	<0.0050
Iron	D-Fe	1630	693	677	6610	<0.060
Lead	D-Pb	<0.10	<0.10	<0.050	0.16	<0.0050
Lithium	D-Li	<0.10	<0.10	<0.10	<1.0	<0.10
Magnesium	D-Mg	649	690	686	666	124
Manganese	D-Mn	56.0	49.7	48.9	72.9	<0.020
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.10	<0.10	<0.050	<0.10	<0.0050
Nickel	D-Ni	0.72	0.60	0.60	<0.50	<0.025
Selenium	D-Se	<0.10	<0.10	<0.050	<0.10	<0.0050
Silver	D-Ag	<0.0050	<0.0050	<0.0025	<0.0050	<0.00025
Sodium	D-Na	60.5	58.8	57.3	66	14.9
Thallium	D-Tl	<0.020	<0.020	<0.010	<0.020	<0.0010
Titanium	D-Ti	<0.10	<0.10	<0.10	<1.0	<0.10
Uranium	D-U	<0.020	<0.020	<0.010	<0.020	0.0222
Vanadium	D-V	1.07	0.507	0.467	3.81	<0.060
Zinc	D-Zn	350	233	230	749	0.028

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	BH4	BH2	BH1	P96-6	BH14B-S
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	16:45	16:45	17:00	16:30	
ALS ID	11	12	13	14	15

**Physical Tests**

Hardness	CaCO3	268	270	225	640	2230
pH		6.03	6.90	7.02	6.71	7.79

**Dissolved Anions**

Alkalinity-Total		CaCO3	21.7	101	147	341	341
Bromide	Br		-	-	-	-	-
Sulphate	SO4		240	171	54.9	286	1570

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File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	BH4	BH2	BH1	P96-6	BH14B-S
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	16:45	16:45	17:00	16:30	
ALS ID	11	12	13	14	15

**Dissolved Metals**

Aluminum	D-Al	9.22	0.089	0.043	<0.020	<0.10
Antimony	D-Sb	<0.0010	<0.0025	<0.00050	<0.0010	<0.0050
Arsenic	D-As	<0.0020	<0.0050	<0.0010	<0.0020	<0.010
Barium	D-Ba	<0.040	0.058	0.057	<0.040	<0.040
Beryllium	D-Be	<0.010	<0.010	<0.010	<0.010	<0.010
Boron	D-B	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	D-Cd	0.0131	0.0190	0.00237	0.00022	<0.00050
Calcium	D-Ca	76.5	75.8	66.4	169	571
Chromium	D-Cr	<0.0010	<0.0025	<0.00050	<0.0010	<0.0050
Cobalt	D-Co	0.0603	<0.0025	0.00087	<0.0010	<0.0050
Copper	D-Cu	0.182	<0.0050	0.0040	<0.0020	<0.010
Iron	D-Fe	<0.060	0.071	<0.060	0.068	<0.060
Lead	D-Pb	0.0025	<0.0050	0.0027	<0.0020	<0.010
Lithium	D-Li	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	D-Mg	18.7	19.5	14.4	53.2	196
Manganese	D-Mn	0.747	0.023	0.217	0.068	<0.020
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0020	<0.0050	<0.0010	<0.0020	<0.010
Nickel	D-Ni	0.068	0.052	<0.0050	0.018	<0.050
Selenium	D-Se	<0.0020	<0.0050	<0.0010	<0.0020	<0.010
Silver	D-Ag	<0.00010	<0.00025	<0.000050	<0.00010	<0.00050
Sodium	D-Na	5.8	5.0	5.6	9.2	16.1
Thallium	D-Tl	<0.00040	<0.0010	<0.00020	<0.00040	<0.0020
Titanium	D-Ti	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	D-U	0.00051	<0.0010	0.00138	0.0120	0.137
Vanadium	D-V	<0.060	<0.060	<0.060	<0.060	<0.060
Zinc	D-Zn	7.66	13.5	0.615	0.727	0.042

Remarks regarding the analyses appear at the beginning of this report.



File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	BH14A	BH14B	P03-08-01	P03-08-02	P03-08-03
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	17:00	18:00	14:15	14:10	14:30
ALS ID	16	17	18	19	20

**Physical Tests**

Hardness	CaCO3	2320	2200	316	409	395
pH		7.75	7.81	8.15	7.99	8.01

**Dissolved Anions**

Alkalinity-Total	CaCO3	341	343	250	265	257
Bromide	Br	-	-	-	-	-
Sulphate	SO4	1550	20.0	36.1	138	130

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Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	BH14A	BH14B	P03-08-01	P03-08-02	P03-08-03
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	17:00	18:00	14:15	14:10	14:30
ALS ID	16	17	18	19	20

**Dissolved Metals**

Aluminum	D-Al	<0.10	<0.050	<0.010	<0.010	<0.010
Antimony	D-Sb	<0.0050	<0.0025	<0.00050	<0.00050	<0.00050
Arsenic	D-As	<0.010	<0.0050	<0.0010	<0.0010	<0.0010
Barium	D-Ba	<0.040	<0.040	0.087	0.257	0.116
Beryllium	D-Be	<0.010	<0.010	<0.010	<0.010	<0.010
Boron	D-B	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium	D-Cd	<0.00050	<0.00025	<0.000050	0.000155	0.000090
Calcium	D-Ca	612	564	81.6	117	113
Chromium	D-Cr	<0.0050	<0.0025	<0.00050	<0.00050	<0.00050
Cobalt	D-Co	<0.0050	<0.0025	<0.00050	0.00067	<0.00050
Copper	D-Cu	<0.010	<0.0050	<0.0010	0.0028	0.0022
Iron	D-Fe	<0.060	<0.060	0.073	<0.060	0.064
Lead	D-Pb	<0.010	<0.0050	<0.0010	<0.0010	<0.0010
Lithium	D-Li	<0.10	<0.10	<0.10	<0.10	<0.10
Magnesium	D-Mg	192	192	27.4	28.7	27.3
Manganese	D-Mn	<0.020	<0.020	0.112	5.09	5.87
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.010	<0.0050	<0.0010	<0.0010	0.0043
Nickel	D-Ni	<0.050	<0.025	<0.0050	0.0256	0.0201
Selenium	D-Se	<0.010	<0.0050	<0.0010	<0.0010	<0.0010
Silver	D-Ag	<0.00050	<0.00025	<0.000050	<0.000050	<0.000050
Sodium	D-Na	21.6	15.9	<4.0	14.4	11.9
Thallium	D-Tl	<0.0020	<0.0010	<0.00020	<0.00020	<0.00020
Titanium	D-Ti	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium	D-U	0.117	0.125	0.00348	0.00303	0.00387
Vanadium	D-V	<0.060	<0.060	<0.060	<0.060	<0.060
Zinc	D-Zn	0.019	0.037	<0.010	<0.010	<0.010

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	P03-08-04	P03-08-05	P03-08-06	P03-08-07	P03-08-06D
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	15:01	15:15	15:20	15:30	15:20
ALS ID	21	22	23	24	25

**Physical Tests**

Hardness	CaCO3	770	1260	850	779	1030
pH		7.82	7.59	7.39	7.55	-

**Dissolved Anions**

Alkalinity-Total		CaCO3	309	168	44.1	54.2	-
Bromide	Br		-	-	-	-	-
Sulphate	SO4		532	1360	1490	1410	-

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Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	P03-08-04	P03-08-05	P03-08-06	P03-08-07	P03-08-06D
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	15:01	15:15	15:20	15:30	15:20
ALS ID	21	22	23	24	25

**Dissolved Metals**

Aluminum	D-Al	<0.050	<0.050	<0.050	<0.050	<0.050
Antimony	D-Sb	<0.0025	0.0057	0.0108	0.0163	0.0071
Arsenic	D-As	<0.0050	0.0076	<0.0050	<0.0050	<0.0050
Barium	D-Ba	<0.040	<0.040	<0.020	<0.020	<0.020
Beryllium	D-Be	<0.010	<0.010	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.20	<0.20	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Calcium	D-Ca	221	410	324	291	390
Chromium	D-Cr	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Cobalt	D-Co	<0.0025	<0.0025	0.0035	0.0050	0.0032
Copper	D-Cu	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Iron	D-Fe	19.9	29.9	0.346	<0.030	0.513
Lead	D-Pb	<0.0050	0.0052	0.0227	0.0103	0.0098
Lithium	D-Li	<0.10	<0.10	<0.050	<0.050	<0.050
Magnesium	D-Mg	52.8	56.6	10.1	12.5	13.5
Manganese	D-Mn	2.99	4.87	0.597	0.677	0.709
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0133	0.0065	0.0067	0.0444	0.0070
Nickel	D-Ni	<0.025	<0.025	<0.025	<0.025	<0.025
Selenium	D-Se	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Silver	D-Ag	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Sodium	D-Na	46.8	169	91.5	138	125
Thallium	D-Tl	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium	D-Ti	<0.10	<0.10	<0.050	<0.050	<0.050
Uranium	D-U	0.0041	0.0013	<0.0010	<0.0010	<0.0010
Vanadium	D-V	<0.060	<0.060	<0.030	<0.030	<0.030
Zinc	D-Zn	0.013	0.015	0.0244	0.0094	0.0236

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID		P03-08-08	P96-6R	P03-03-01	P03-03-04	P03-03-05
Sample Date		05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time		15:56				
ALS ID		26	27	28	29	30

**Physical Tests**

Hardness	CaCO3	100	720	331	310	451
pH		8.35	6.66	8.01	6.44	7.01

**Dissolved Anions**

Alkalinity-Total		CaCO3	128	351	265	23.1	100
Bromide	Br		-	-	<0.050	<0.050	<0.050
Sulphate	SO4		143	278	3.80	320	437

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File No. V7902  
**RESULTS OF ANALYSIS - Water**



Sample ID	P03-08-08	P96-6R	P03-03-01	P03-03-04	P03-03-05
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time	15:56				
ALS ID	26	27	28	29	30

**Dissolved Metals**

Aluminum	D-Al	<0.020	<0.020	<0.010	<0.050	<0.10
Antimony	D-Sb	<0.0010	<0.0010	<0.00050	<0.0025	<0.0050
Arsenic	D-As	<0.0020	<0.0020	0.0045	<0.0050	0.011
Barium	D-Ba	0.023	0.028	0.289	0.060	0.141
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.00010	0.00024	<0.00050	0.00215	<0.0050
Calcium	D-Ca	21.5	185	97.5	92.2	136
Chromium	D-Cr	<0.0010	<0.0010	<0.00050	<0.0025	<0.0050
Cobalt	D-Co	0.0020	<0.0010	0.00255	0.153	0.0331
Copper	D-Cu	<0.0020	<0.0020	<0.0010	<0.0050	<0.010
Iron	D-Fe	0.046	0.069	4.45	21.9	21.1
Lead	D-Pb	0.0036	<0.0020	<0.0010	<0.0050	<0.010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	11.3	62.5	21.2	19.3	26.7
Manganese	D-Mn	0.036	0.077	0.191	15.3	31.5
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0429	<0.0020	0.0023	<0.0050	<0.010
Nickel	D-Ni	<0.010	0.020	<0.0050	0.146	<0.050
Selenium	D-Se	<0.0020	<0.0020	<0.0010	<0.0050	<0.010
Silver	D-Ag	<0.00010	<0.00010	<0.00050	<0.00025	<0.00050
Sodium	D-Na	103	10.3	13.4	12.2	36.2
Thallium	D-Tl	<0.00040	<0.00040	<0.00020	<0.0010	<0.0020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	<0.00040	0.0129	0.00041	<0.0010	<0.0020
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	0.0084	0.768	0.0070	3.52	0.0778

Remarks regarding the analyses appear at the beginning of this report.

File No. V7902

**RESULTS OF ANALYSIS - Water**



Sample ID		P03-03-06	P03-03-07	P03-03-08	P03-03-05D
Sample Date		05-05-05	05-05-05	05-05-05	05-05-05
Sample Time					
ALS ID		31	32	33	34

**Physical Tests**

Hardness	CaCO3	905	2990	4660	471
pH		6.14	3.72	3.18	6.86

**Dissolved Anions**

Alkalinity-Total		CaCO3	101	<1.0	<1.0	104
Bromide	Br		<1.0	<50	<50	<0.050
Sulphate	SO4		1680	13700	25100	435

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Remarks regarding the analyses appear at the beginning of this report.

**RESULTS OF ANALYSIS - Water**

Sample ID	P03-03-06	P03-03-07	P03-03-08	P03-03-05D
Sample Date	05-05-05	05-05-05	05-05-05	05-05-05
Sample Time				
ALS ID	31	32	33	34

**Dissolved Metals**

Aluminum	D-Al	<0.050	<1.0	<5.0	<0.10
Antimony	D-Sb	<0.0025	<0.050	<0.25	<0.0050
Arsenic	D-As	<0.0050	<0.10	<0.50	<0.010
Barium	D-Ba	<0.020	<0.20	<0.40	0.152
Beryllium	D-Be	<0.0050	<0.050	<0.10	<0.0050
Boron	D-B	<0.10	<1.0	<2.0	<0.10
Cadmium	D-Cd	<0.00025	<0.0050	<0.025	<0.00050
Calcium	D-Ca	246	428	457	142
Chromium	D-Cr	<0.0025	<0.050	<0.25	<0.0050
Cobalt	D-Co	<0.0025	<0.050	<0.25	0.0325
Copper	D-Cu	<0.0050	<0.10	<0.50	<0.010
Iron	D-Fe	132	5300	16300	22.0
Lead	D-Pb	<0.0050	<0.10	1.01	<0.010
Lithium	D-Li	<0.050	<0.50	<1.0	<0.050
Magnesium	D-Mg	70.8	466	854	28.1
Manganese	D-Mn	8.20	64.9	206	32.4
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0067	<0.10	<0.50	<0.010
Nickel	D-Ni	<0.025	<0.50	<2.5	<0.050
Selenium	D-Se	<0.0050	<0.10	<0.50	<0.010
Silver	D-Ag	<0.00025	<0.0050	<0.025	<0.00050
Sodium	D-Na	162	494	502	38.6
Thallium	D-Tl	<0.0010	<0.020	<0.10	<0.0020
Titanium	D-Ti	<0.050	<0.50	<1.0	<0.050
Uranium	D-U	<0.0010	<0.020	<0.10	<0.0020
Vanadium	D-V	<0.030	3.35	9.65	<0.030
Zinc	D-Zn	0.0085	56.5	703	0.0808

Remarks regarding the analyses appear at the beginning of this report.



**Appendix 1 - QUALITY CONTROL - Replicates**



Water	P03-08-06D	P03-08-06D	P03-03-01	P03-03-01
	05-05-05 15:20	QC # 440224	05-05-05	QC # 440225

**Physical Tests**

Hardness	CaCO3	1030	906	331	336
pH		-	-	8.01	8.05

**Dissolved Anions**

Alkalinity-Total		CaCO3	-	-	265	270
Bromide	Br		-	-	<0.050	<0.050
Sulphate	SO4		-	-	3.80	3.77

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Remarks regarding the analyses appear at the beginning of this report.

**Appendix 1 - QUALITY CONTROL - Replicates**



Water		P03-08-06D	P03-08-06D	P03-03-01	P03-03-01
		05-05-05 15:20	QC # 440224	05-05-05	QC # 440225
<b>Dissolved Metals</b>					
Aluminum	D-Al	<0.050	<0.050	<0.010	<0.010
Antimony	D-Sb	0.0071	0.0071	<0.00050	<0.00050
Arsenic	D-As	<0.0050	<0.0050	0.0045	0.0044
Barium	D-Ba	<0.020	<0.020	0.289	0.294
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.00025	<0.00025	<0.000050	<0.000050
Calcium	D-Ca	390	343	97.5	99.0
Chromium	D-Cr	<0.0025	<0.0025	<0.00050	<0.00050
Cobalt	D-Co	0.0032	0.0033	0.00255	0.00245
Copper	D-Cu	<0.0050	<0.0050	<0.0010	<0.0010
Iron	D-Fe	0.513	0.448	4.45	4.55
Lead	D-Pb	0.0098	0.0098	<0.0010	<0.0010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	13.5	12.2	21.2	21.6
Manganese	D-Mn	0.709	0.619	0.191	0.195
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0070	0.0075	0.0023	0.0023
Nickel	D-Ni	<0.025	<0.025	<0.0050	<0.0050
Selenium	D-Se	<0.0050	<0.0050	<0.0010	<0.0010
Silver	D-Ag	<0.00025	<0.00025	<0.000050	<0.000050
Sodium	D-Na	125	120	13.4	13.6
Thallium	D-Tl	<0.0010	<0.0010	<0.00020	<0.00020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	<0.0010	<0.0010	0.00041	0.00041
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	0.0236	0.0212	0.0070	0.0069

Remarks regarding the analyses appear at the beginning of this report.

**Appendix 1 - QUALITY CONTROL - Replicates**



Water	P03-03-05D	P03-03-05D
	05-05-05	QC # 440226

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**Physical Tests**

Hardness	CaCO3	471	447
pH		6.86	6.92

**Dissolved Anions**

Alkalinity-Total		CaCO3	104	104
Bromide	Br		<0.050	<0.050
Sulphate	SO4		435	436

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Remarks regarding the analyses appear at the beginning of this report.

**Appendix 1 - QUALITY CONTROL - Replicates**

Water	P03-03-05D	P03-03-05D
	05-05-05	QC # 440226

**Dissolved Metals**

Aluminum	D-Al	<0.10	<0.10
Antimony	D-Sb	<0.0050	<0.0050
Arsenic	D-As	<0.010	<0.010
Barium	D-Ba	0.152	0.144
Beryllium	D-Be	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10
Cadmium	D-Cd	<0.00050	<0.00050
Calcium	D-Ca	142	136
Chromium	D-Cr	<0.0050	<0.0050
Cobalt	D-Co	0.0325	0.0320
Copper	D-Cu	<0.010	<0.010
Iron	D-Fe	22.0	20.8
Lead	D-Pb	<0.010	<0.010
Lithium	D-Li	<0.050	<0.050
Magnesium	D-Mg	28.1	26.2
Manganese	D-Mn	32.4	31.0
Mercury	D-Hg	<0.00020	<0.00020
Molybdenum	D-Mo	<0.010	<0.010
Nickel	D-Ni	<0.050	<0.050
Selenium	D-Se	<0.010	<0.010
Silver	D-Ag	<0.00050	<0.00050
Sodium	D-Na	38.6	36.8
Thallium	D-Tl	<0.0020	<0.0020
Titanium	D-Ti	<0.050	<0.050
Uranium	D-U	<0.0020	<0.0020
Vanadium	D-V	<0.030	<0.030
Zinc	D-Zn	0.0808	0.0774

Remarks regarding the analyses appear at the beginning of this report.

## Appendix 2 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

### **pH in Water**

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

Recommended Holding Time:

Sample: 2 hours

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### **Alkalinity in Water by Colourimetry**

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

Recommended Holding Time:

Sample: 14 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### **Sulphate in Water**

This analysis is carried out using procedures adapted from APHA Method 4500-SO4 "Sulphate". Sulphate is determined using the turbidimetric method.

Recommended Holding Time:

Sample: 28 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### **Metals in Water**

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

File No. V7902

## Appendix 2 - METHODOLOGY - Continued



Recommended Holding Time:

Sample: 6 months

Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

### Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

Recommended Holding Time:

Sample: 28 days

Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

### Alkalinity in Water by Titration

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Recommended Holding Time:

Sample: 14 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### Dissolved Anions in Water by Ion Chromatography

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions are determined by filtering the sample through a 0.45 micron membrane filter and injecting the filtrate onto a Dionex IonPac AG17 anion exchange column with a hydroxide eluent stream. Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

Recommended Holding Time:

Sample: 28 days (bromide, chloride, fluoride, sulphate)

Sample: 2 days (nitrate, nitrite)

File No. V7902

**Appendix 2 - METHODOLOGY - Continued**



Reference: APHA and EPA

Laboratory Location: ALS Environmental, Vancouver

**Results contained within this certificate relate only to the samples as submitted.**

**This Certificate Of Analysis shall only be reproduced in full, except with the written approval of ALS Environmental.**

**End of Report**